**AMMONIA EMISSION ASSESSMENT FROM DIESEL AND GASOLINE VEHICLES: ON-ROAD AND DYNAMOMETER STUDIES**

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The importance of ambient ammonia (NH3) to the formation of wintertime particulate in northern Utah has been well documented in the last few years (UWFPS, 2017). Recent emissions inventories have estimated 3,884 tons/year of ammonia emissions are emitted into the relevant airsheds, and approximately 22% is estimated to be derived from mobile sources. However, attempts by the Utah Division of Air Quality (UDAQ) to model atmospheric NH3 concentrations and subsequent photochemical reactions, as well as limited actual ambient NH3 observations, have suggested that current NH3 emissions inventory may be too low by a factor averaging about 6x. Inadequate mobile source emission factors have been speculated as a likely source of at least some of these deficiencies.

As such, a collaborative research project between Utah State University (USU), Weber State University (WSU), and UDAQ was initiated to examine on-road and dynamometer tailpipe emissions of NH3 and the more typical emission gases (oxides of nitrogen, carbon monoxide, carbon dioxide, hydrocarbons) from a representative sampling of gasoline and diesel vehicles typical to the northern Utah fleet. An Applus 5-Gas analyzer was used to measure the typical gases and an ECM MiniPEMS was used to measure tailpipe NOx and NH3. Additionally, a Picarro G2103 Cavity Ring Down Spectrometer was used to verify laboratory behavior of the MiniPEMs NH3 measurements.

The on-road tests were performed along a developed roadway transect in Logan, UT which included various speed limits (25-50 mph) and grades (-1.1% to +5.2%). The dynamometer test were conducted at WSU’s National Center for Automotive Science and Technology (NCAST). To date, approximately a dozen vehicles, mixed between gasoline and diesel technologies, have been tested on one or both test platforms. Although the data are still being compiled, and several more test vehicles are to be scheduled, preliminary results suggest on-road gasoline engines emit on the order of a few hundred milligrams per mile – similar to literature researched values. In comparison, limited testing to-date has suggested diesel passenger vehicles, in which systems using DEF (diesel exhaust fluid), produced lower tailpipe NH3 emissions. More completely analyzed data and additional vehicle testing will be discussed.